OPTIONAL TRAINING CURRICULUM

Application of Pulse Oximetry

KY Ambulance Service Specific Continuing Education Curriculum for the Emergency Medical Technician Basic (EMT-B) using a Non-invasive Monitoring Device

Instructions Preparatory to Meeting the EMT-B Scope of Practice Requirements

INSTRUCTOR MANUAL

Kentucky Board of Emergency Medical Services
Pursuant to 202 KAR 7:060 and 7:080

This curriculum relates to the Department of Transportation (D.O.T.) 1994 EMT Basic National Standard Curriculum from the Module 8 Elective Advanced Airway Management component, and is designed as a KY optional Supplemental curriculum referenced in 202 KAR 7:060 and 7:080

INTRODUCTION

This is a minimum twenty (20) minute curriculum **for use in an EMT Basic (EMT-B) continuing education course** in conjunction with the respiratory section of the Emergency Medical Technician (EMT-B) initial training course. Performance of the skill will be service specific and the <u>training is primarily designed for EMT-Bs to assist an Advanced Life Support (ALS) provider in patient care.</u>

This curriculum is an optional, KY training Module commencing with the effective date of 202 KAR 7:060 and 7:080. An EMT-B working for an ambulance service contracted with a physician medical director and offering this procedure in patient care shall be required to obtain this training through continuing education. This curriculum, or an equivalent curriculum, that <u>has been submitted to, reviewed and recommended to the Kentucky Board of Emergency Medical Services for approval, is to be used</u>. Training through continuing education is for a person who received their initial EMT-B training prior to the introduction of this curriculum as acceptable training and procedure for use within the KY EMT-B scope of practice.

OBJECTIVES:

Psychomotor

1. The student shall correctly apply the pulse oximetry monitoring device.
2. The student shall obtain a pulse oximetry reading.
3. The student shall be able to correctly troubleshoot and correct simple problems.

WORK ENVIRONMENT: With service having written agreement with
physician Medical Director.

**LEAD INSTRUCTOR
QUALIFICATIONS:** Minimum, KY EMT-B Instructor. If this person
does not additionally have ALS credentials, an adjunct
faculty holding current ALS credentials may need to be
recruited to teach this lesson based on this curriculum.

**RECOMMENDED MINIMUM
TIME TO COMPLETE:** Minimum of twenty (20) minutes which combines part
Lecture overview and part Skills Practice.

EQUIPMENT:
      Pulse oximetry monitoring unit
      Patient transducer and cable
      Fingernail polish remover pad

OVERVIEW

Emphasize to the EMT-B: Treat the patient, not the device! If the saturation level is 90% or better, <u>maintain this oxygen saturation level with high concentration oxygen administration if there is great potential for development of a shock status</u> ! If the saturation level falls below 90%, more aggressive oxygenation is in order, especially if the EMT-B is functioning as part of an ALS service crew.

I. Describe the basic concept of Pulse Oximetry monitoring.
   A. Objectively determines the oxygenation status of a patient when applied correctly.
   B. The pulse oximeter functions by measuring, via red and infrared light, through the skin to the arterial bed. It measures the hemoglobin saturation in the bloodstream.
   C. The reading will be expressed by percent of oxygen in patients.
   D. Provide any patient whose saturation level is below 90% with aggressive oxygenation.

II. Possible invalid readings
   A. A patient with low blood flow states, (i.e., shock states, hypothermic, hypovolemia) may show an inaccurate low oxygenation percent.
   B. A patient who has experience carbon monoxide poisoning may show a false high percent reading. In this case, the oximeter is picking up the carbon monoxide that is attached to the hemoglobin and inaccurately assuming it to be hemoglobin and oxygen.
   C. Patients with certain anemias and oxygen capacity carrying diseases (i.e., sickle cell) may also show a false high reading. The monitor is measuring that each hemoglobin molecule is saturated but is not able to accurately note that the hemoglobin count itself is diminished.
   D. As with all monitors - in cases with these type patients one must monitor the patient and act accordingly.
   E. A patient with fingernail polish, excessive grease and dirt, nail-tips, or gel nails may also present with a false low reading. The infrared and red light is not able to penetrate the polish or nail endings.

III. Placement of the transducer
   A. Most commonly accepted place is the distal end of a finger or toe.
   B. Pediatric pulse oximetry transducers tape around the great toe or around the heel.
   C. The ear lobe is also an acceptable area.
   D. The pediatric transducer may also be taped across the bridge of the nose of an adult patient. This is especially useful in patients with bad circulation to distal extremities.

E. Prior to placing the transducer onto a nailbed, remove excessive dirt, grease, or nail polish. If possible remove any nail tips.

Obtaining a reading.
   A. Once the transducer is placed and the monitor turned on, the monitor will start sensing a pulse reading. Once the pulse the monitor senses the pulse, the Oxygen saturation will be expressed in a percent fashion.
   B. The patient must have a palpable pulse before using the monitor.

V. Trouble shooting for simple errors.
   A. Not detecting a pulse
      1. Patient does not have a pulse
      2. Transducer not applied to patient
      3. Transducer not able to read through nail polish, etc.
      4. Patient cable not connected to monitor
      5. Monitor not turned on
      6. Low battery
   B. Continuous alarm sounds
      1. Alarm limits set too low
      2. Alarm limits set too high

SKILL SEQUENCE

1. Remove excessive grime or polish from finger (if that is the applicable sensing area)
2. Apply the transducer correctly.
3. Connect patient transducer cable to monitor.
4. Turn monitor on.
5. Obtain reading.
6. Trouble shoot any simple error.